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family, the hours and names of their daily meals, forms of address, the religious festival of San Ignacio de Loyola (in later lessons other Spanish feasts) form a second group of lessons. The next group, in the form of letters of friendship, introduces matters of interest in the cities of Seville and Salamanca. The last group contains selections from such noted authors as Ibañez, Valdés, Alarcon, in which are presented phases of life characteristic of Valencia, Andalusia, Santiago, and the mountain districts, and the conflict between the old and the new ideals; in closing there is given a selection from Castelar which presents the bullfight from a "Spanish viewpoint."

The "Appendix" contains the usual paradigms of the regular verbs, lists of irregular verbs with page references to the more complete treatment of each, and "is intended to be complete enough for subsequent reference. Particular attention is called to such novel features as the lists of verbs requiring or not requiring prepositions before the following infinitives, the names of animals and the sounds that they make, the geographical adjectives, the nicknames of persons, the brief but comprehensive treatment of Spanish prosody, and the examples of epistolary style" (the authors in the "Preface").

There are also 5 pages of poetical extracts and 11 pages of prose readings from Spanish authors. The book is furnished with both Spanish and English vocabularies and an index.

For the mature student the lessons are none too long for single assignments; for the more immature they readily lend themselves to division into two or three parts, as suggested in the "Preface."

This text is an attempt to combine the "natural" and the "grammatical" methods. It should prove a "usable book" both in high schools and in colleges. The lines of interest are not too difficult for the one nor too simple for the other. The reading-matter is sufficient in quantity and variety for a year's work with students in the second and third years of their high-school course. It gives the spirit of Spanish life and thought without emphasizing the picaresque element.

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*Applied Biology.* By MAURICE A. BIGELOW and ANNA N. BIGELOW.  
New York: Macmillan, 1911. Pp. xi+583. \$1.40 net.

*Teachers' Manual of Biology.* By MAURICE A. BIGELOW. New York:  
Macmillan, 1912. Pp. vii+113. \$0.40.

Bigelow's *Applied Biology* has now been in the hands of teachers long enough for many of them to find that it is a most teachable book, while the more recent appearance of the *Teachers' Manual* to accompany the main text will doubtless make it still more acceptable and usable in the classroom. A careful examination of the contents of both these volumes leads to the

impression that the authors have been more successful than many of their predecessors in combining into a somewhat homogeneous whole the diverse materials of plant, animal, and human biology, to illustrate the great ideas of the science of life. The wide experience of the authors has also enabled them to choose judiciously from the great mass of available material those parts most suitable for classroom use. Aside from its pedagogical suitability, the leading motive actuating the choice of material is indicated in the term *applied* and defined by the authors as aiming "(1) to call attention to the most important facts and principles to be learned by a study of selected animals and plants and then (2) to show how biological science applies to everyday life."

The relative amount of attention given to the different fields of biology may be indicated by noting that some 200 pages are denoted more especially to plants, 185 pages to animals, slightly more than 100 to human biology, and 60 pages to introduction, general discussions, and a brief summary of some of the more important facts relating to classification and problems of heredity. Throughout all these phases of the subject, the physiological viewpoint is made relatively prominent.

The material in the chapters devoted to plants seems to have been well chosen. Beginning with seed plants the various organs are successively considered, enough morphology being included to make the functions and the relations of the organs to their environment intelligible. An occasional statement may not be entirely in accord with the views of many botanists, such for example as terming gymnosperms "seed plants without true flowers," but on the whole the treatment is broad and accurate. A generous amount of attention is given to pathogenic fungi and bacteria, nor are the beneficial micro-organisms neglected.

The reviewer does not feel competent to criticize the treatment of animal biology, but it appears to be fully equal to that accorded to plant life, while in the chapters devoted more particularly to man it is pleasing to note the emphasis placed upon matters of personal and public hygiene. The discussion of the effects of stimulants and narcotics is at once the most scientific and most reasonable that has appeared in any textbook intended for the use of high-school pupils, although it is to be expected that its moderate tone will meet with criticism from the extremists in the ranks of the temperance party.

The *Teachers' Manual* contains in concise form a very large amount of the most valuable material. In addition to more explicit directions for many of the experiments and demonstrations, as well as explanations as to how the desired results may most readily be obtained, there is much information as to what equipment is necessary and where equipment and supplies may be obtained.

The publication of the manual a year after the appearance of the textbook has enabled the authors to make a few needed corrections in the text of the latter. They have also taken advantage of this opportunity to explain some of their reasons for the selections of subject-matter, and to defend the position

they have taken on various questions discussed in the text, but by far the most valuable feature of the book, which alone is worth many times its price to any teacher of biology, is the very complete and fully annotated bibliography, brought down to date, and including all the more important bulletins that the teacher may obtain free of cost. With the manual at hand there can be little excuse for any teacher not having a valuable biological reference library at a trifling cost.

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*Plane and Solid Geometry.* By C. A. HART and DANIEL D. FELDMAN.  
New York: American Book Co., 1912. Pp. viii + 488. \$1.25.

This text, while it follows the traditional order and method of development of the subject, has a number of distinctive features. To those teachers who are looking for another book of this type the present volume should make a strong appeal. Among the prominent features is an arrangement in parallel columns of the steps in the proofs of theorems and their reasons. "This arrangement gives a definite model for proving exercises, renders the careless omission of the reasons in a demonstration impossible, leads to accurate thinking, and greatly lightens the labor of reading papers."

Most of the proofs of theorems are given in full. Some of the easier theorems are left for the pupil to prove, especially in the solid geometry. Yet those who believe strongly in the suggestive method of treatment of theorems must look elsewhere.

The collection and arrangement of abstract exercises of the usual types is good. But to those teachers who are interested in the attempt to vitalize geometry by teaching it in relation to its practical uses in the world's work, the applied problems in this new text will prove a disappointment.

The proofs of the "incommensurable cases" of theorems, which an increasing number of teachers think a waste of the time of the average boy or girl, are given. The trigonometric functions and their application to the measurement of distances are not introduced in connection with similar triangles, as in many of the newer texts and as recommended by associations of teachers of mathematics.

The many historical notes give interest to the subject. The drawings are well executed.

*Complete Business Arithmetic.* By GEORGE H. VAN TUYL. New York: American Book Co., 1911. Pp. 416.

Teachers of commercial classes will welcome this text. Emphasis is placed upon developing facility and accuracy in handling the fundamental operations. The aim is the mastery of fundamental principles rather than of set rules in the solution of problems. The problem material has informational value. Many of the problems are taken from the business affairs of corporations, cities, states,